Jun 23rd, 4:00 PM - 4:15 PM

Session E6: Monitoring Strategy of Sturgeon Behaviour to Ensure Functionality of Future Fish Passes: The Iron Gate II Case in the Danube River

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Monitoring strategy of sturgeon behaviour to ensure functionality of future fish passes: the Iron Gate II case in the Danube River

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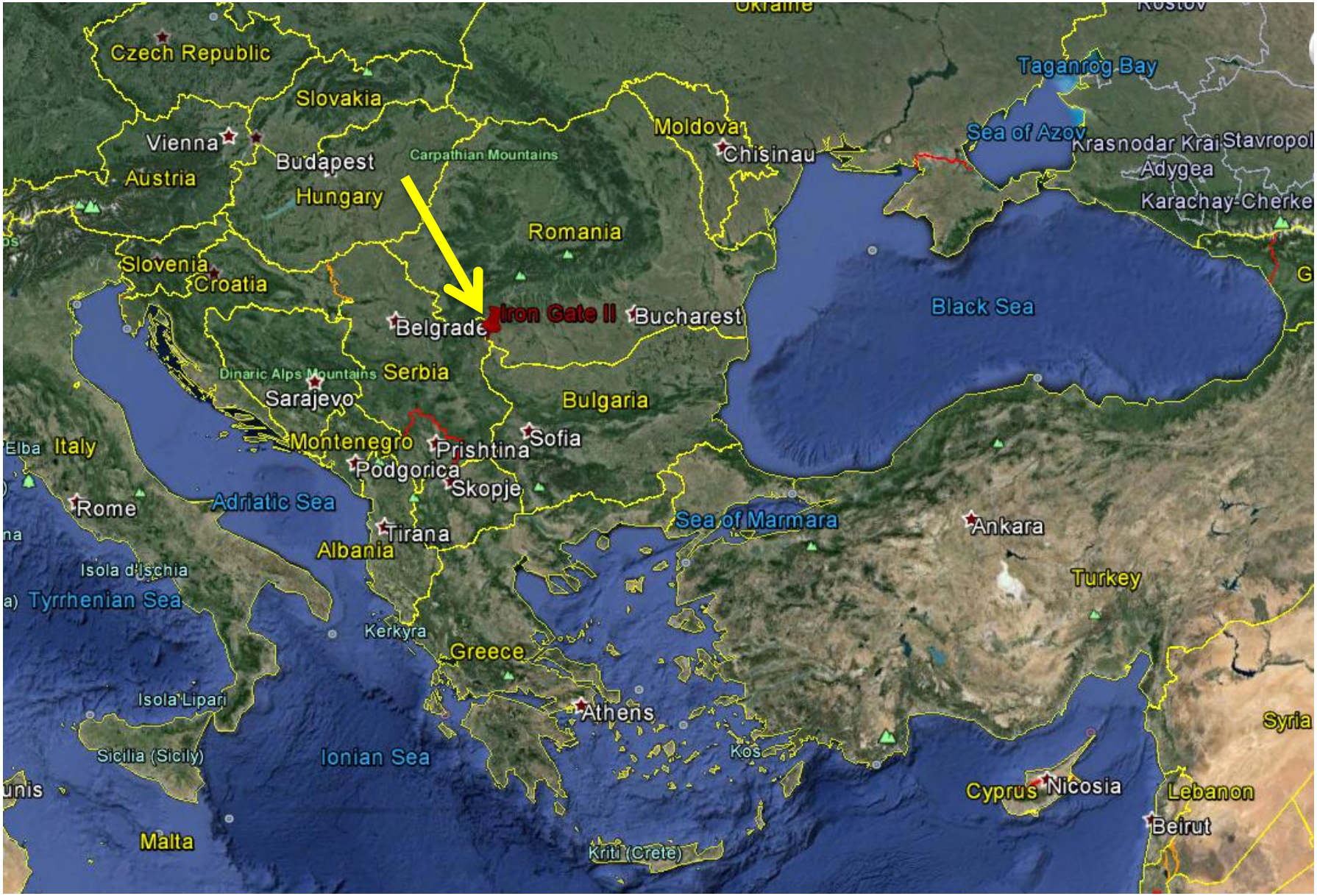
Location


Czech Republic
Slovakia
Vienna
Austria
Budapest
Hungary
Carpathian Mountains
Moldova
Chisinau
Taganrog Bay
Sea of Azov
Krasnodar Krai
Adygea
Karachay-Cherke
Stavropol
Romania
Slovenia
Croatia
Belgrade
Iron Gate II
Bucharest
Black Sea
Dinaric Alps Mountains
Serbia
Sarajevo
Bulgaria
Montenegro
Prishtina
Sofia
Podgorica
Skopje
Italy
Rome
Adriatic Sea
Tirana
Albania
Sea of Marmara
Ankara
Turkey
Isola d'Ischia
Tyrrhenian Sea
Kerkyra
Greece
Isola Lipari
Athens
Kos
Syria
Sicilia (Sicily)
Ionian Sea
Cyprus
Nicosia
Lebanon
Beirut
Malta
Kriti (Crete)


HPP Gogoşu
23 AUG 2005
2:00am
Location
Mihajlovac
Romania
Serbia
HPP - Iron Gate / Djerdap II
© 2007 Tele Atlas
Image © 2008 TerraMetrics
© 2007 Europa Technologies
4.89 km
USGS

Objectives:

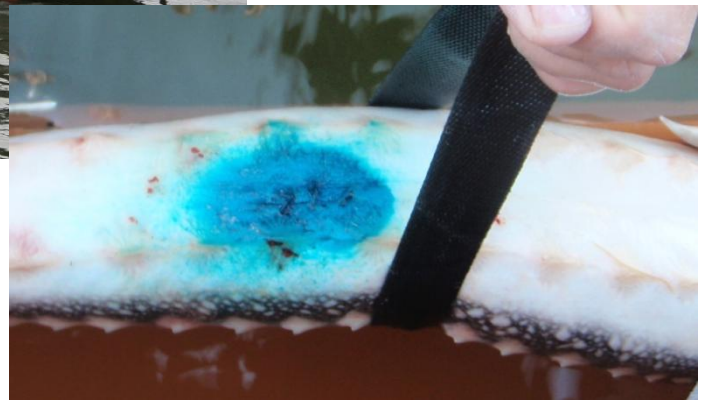
- To conduct on site 3D bathymetry survey and ADCP velocity profiles
- Choose and adopt low stress inducing handling methods for tagging sturgeons
- To test bio-telemetry methods and equipment to achieve required resolution for locating sturgeons d/s Iron Gate II dams
- To choose molecular biology method to describe genetic diversity of tracked sturgeons
- To work out strategy for monitoring sturgeon behavior to ensure functionality of future up - and down stream fish passages

Materials and Methods

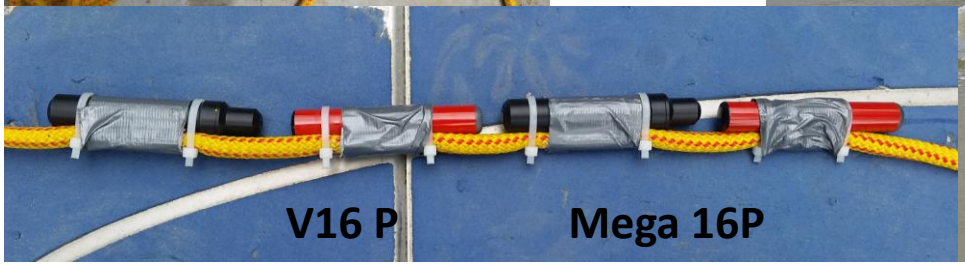
1. Fish handling in the nets to avoid lifting it of the water

Side electro-narcosis (2013)

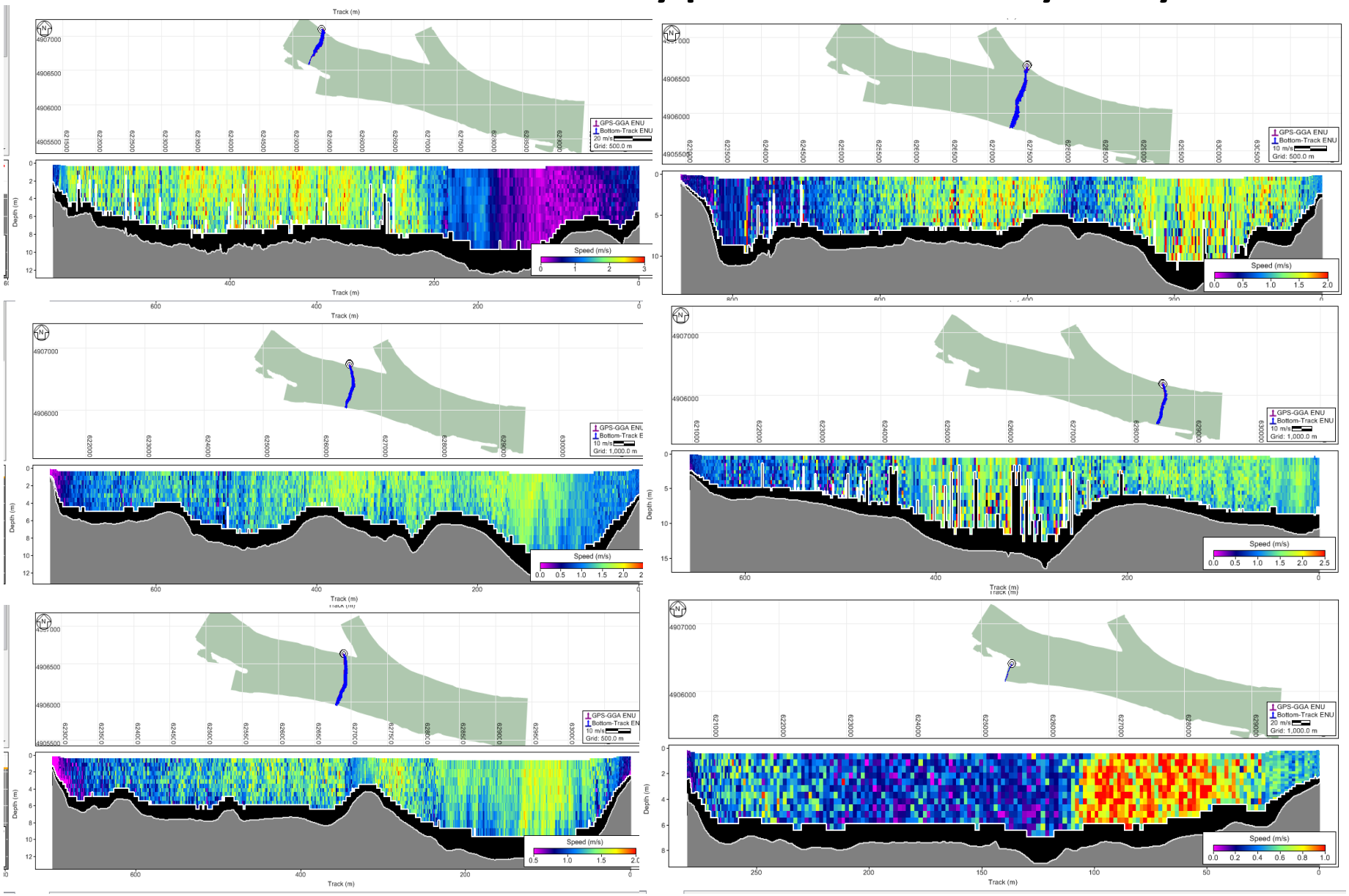
2. Electro-narcosis tube for surgical implanting of acoustic transmitters (2009)



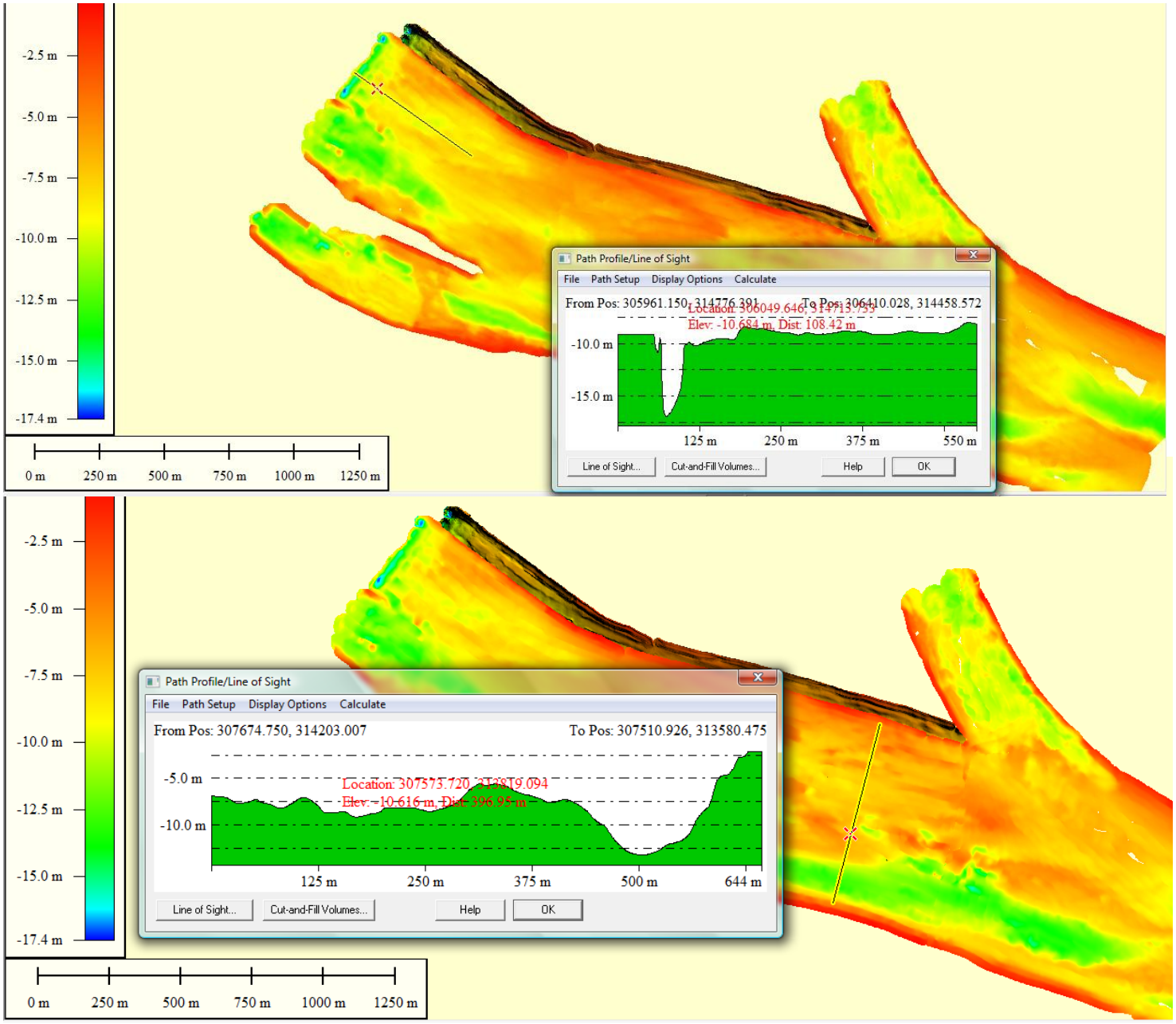
Testing detection range of Vemco vs Thelma acoustic transmitters and receivers



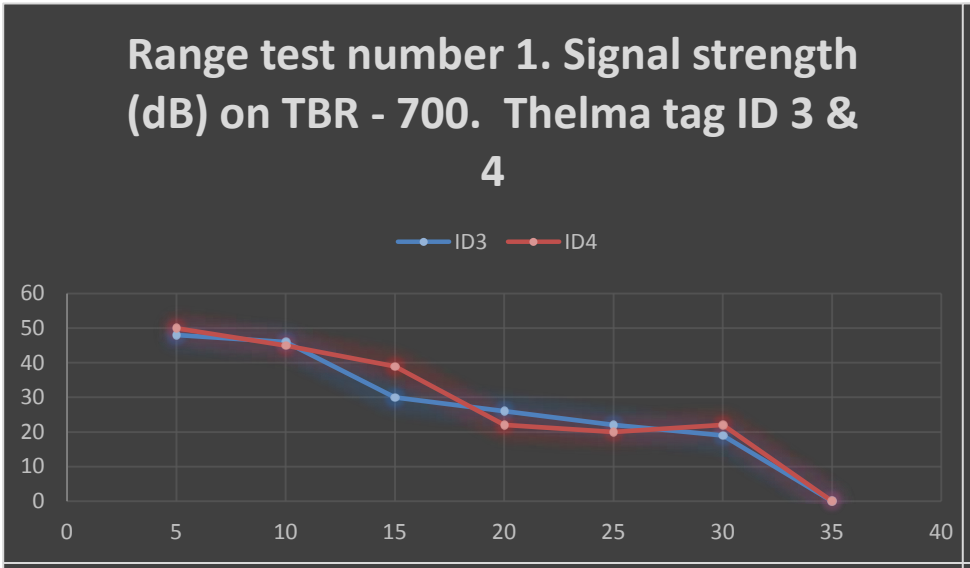
Results: 1. ADCP velocity profiles & 3D bathymetry

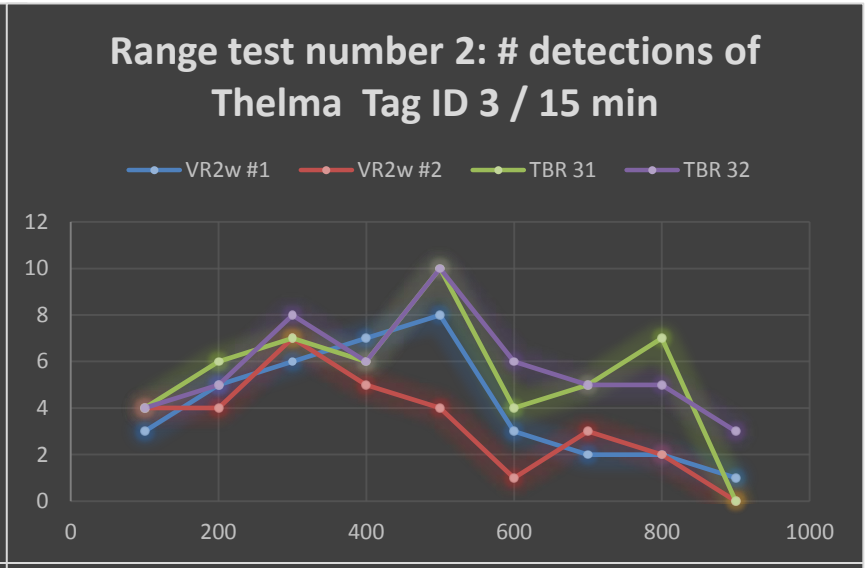


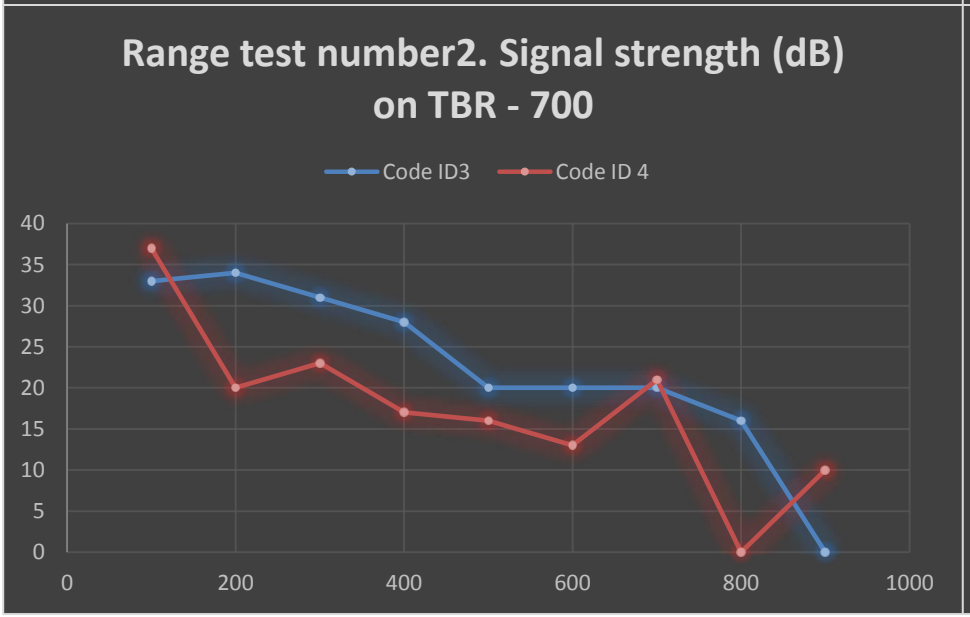
2. Multibeam 3D bathymetry

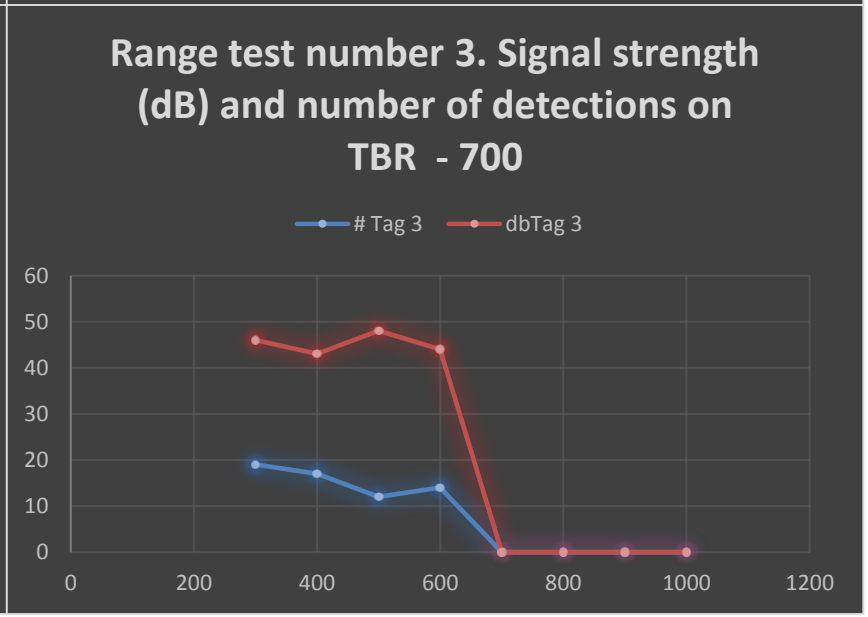


3. Testing detection range of Vemco vs. Thelma acoustic equipment









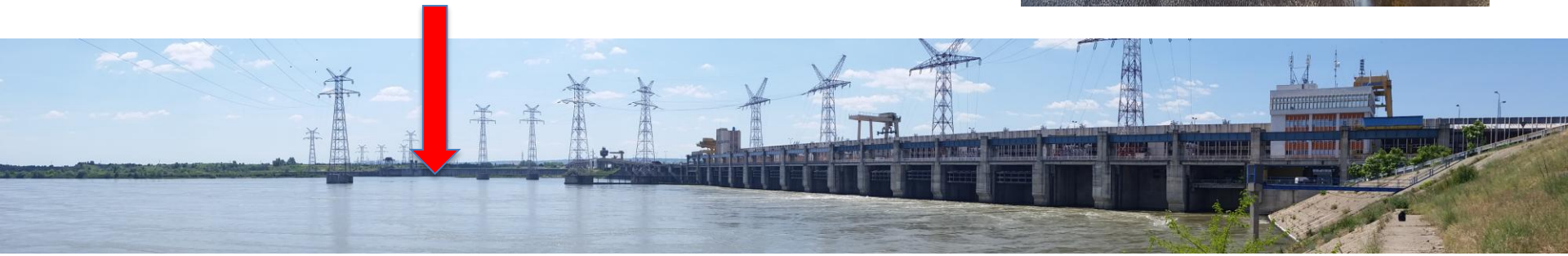
4. Testing detection range of ATS 3 stage radio transmitters

•Receiver SRX_600 from Lotec Inc. Canada, covering the frequency range from 142 to 143 MHz

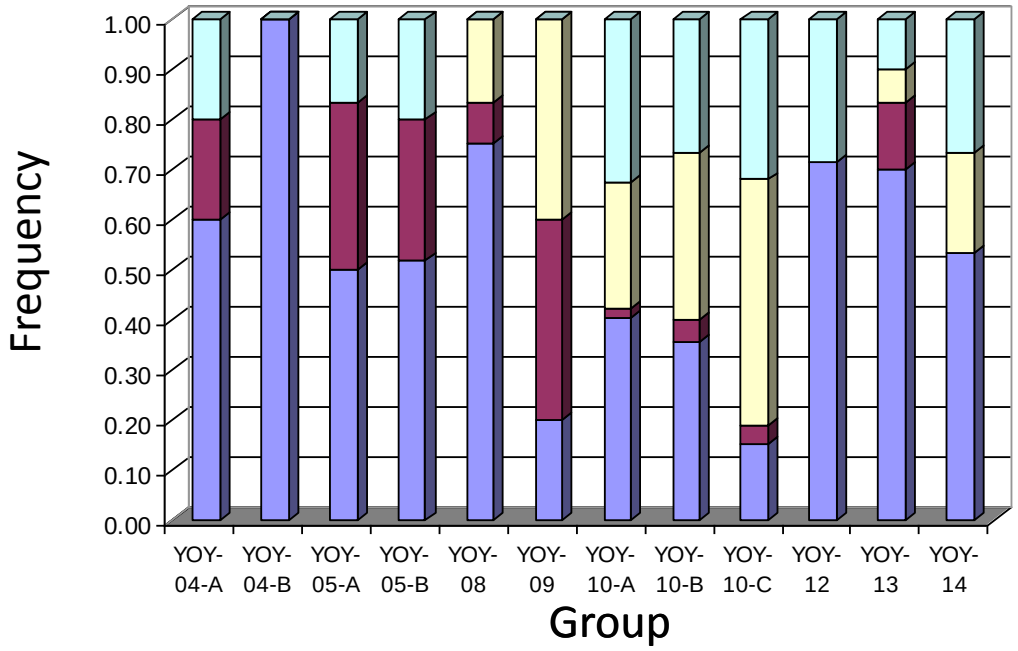
• 4 element Yagi antenna + 2 m long coax (RG58) cable

• 12 mm rope with the whip antennas in a horizontal position at 0.5 m up from the bottom at water depth of 11.5 m

•Due to extremely high radio noise signals from radio tags could not be recorded at all

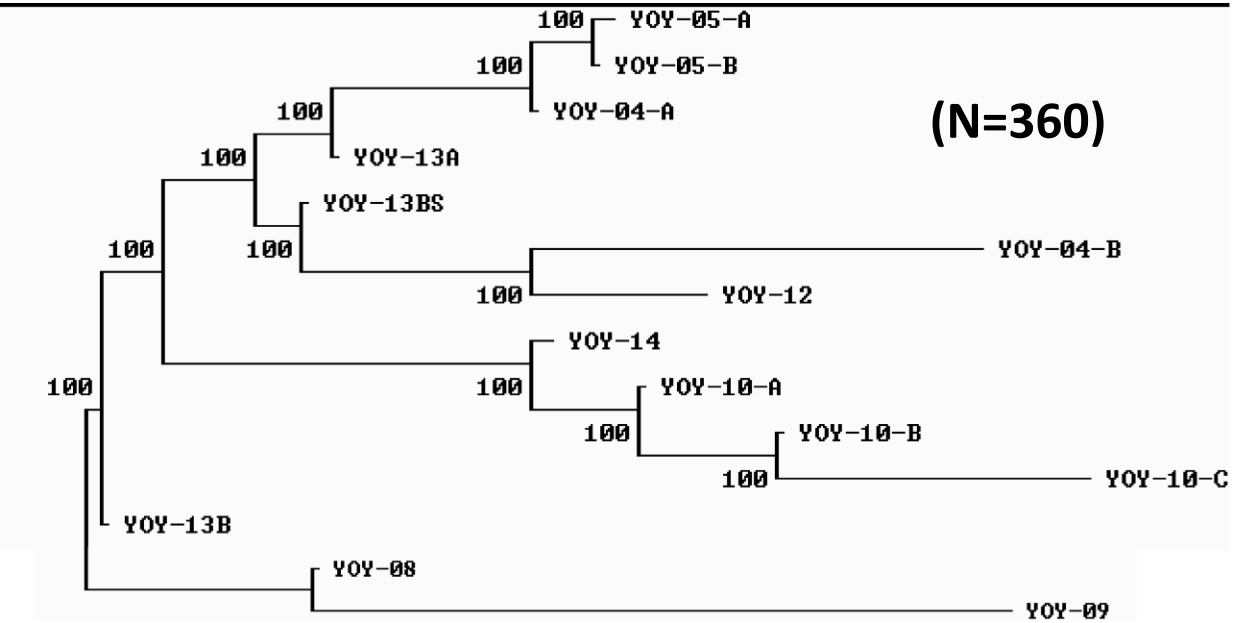


5. Screening genetic diversity of sturgeons at Iron Gate dams



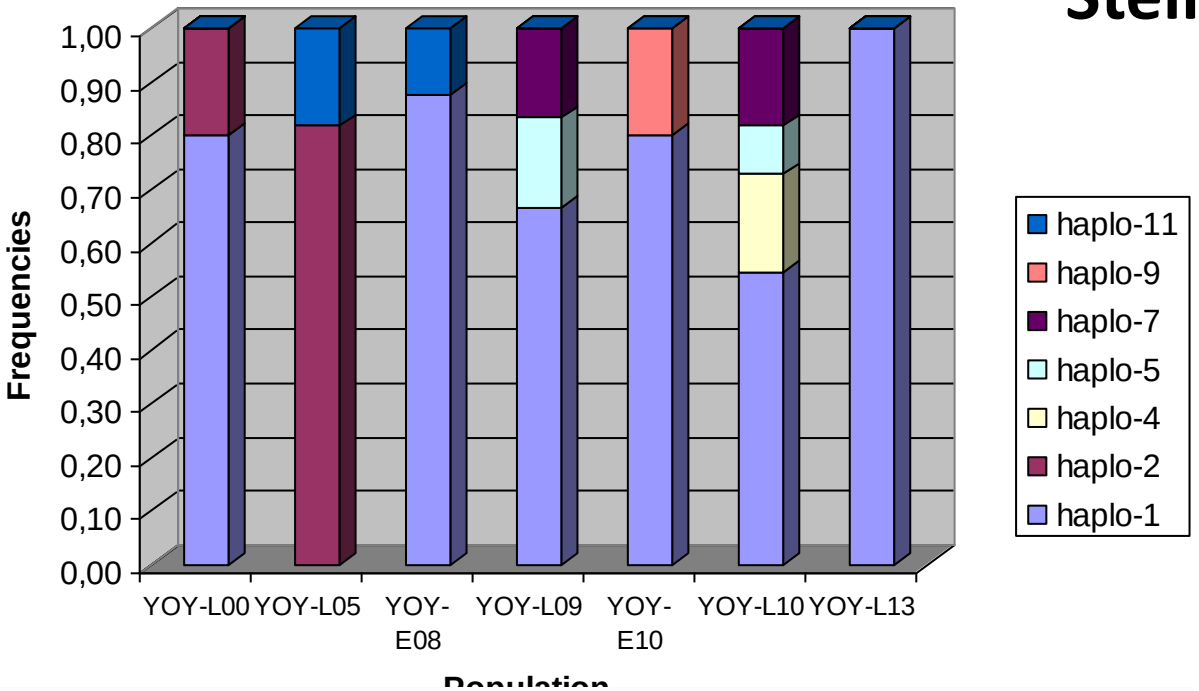
Beluga sturgeons

***Cytochrome b* RFLP haplotype** frequency in groups of YOY beluga sturgeons (**2004 - 2014**)

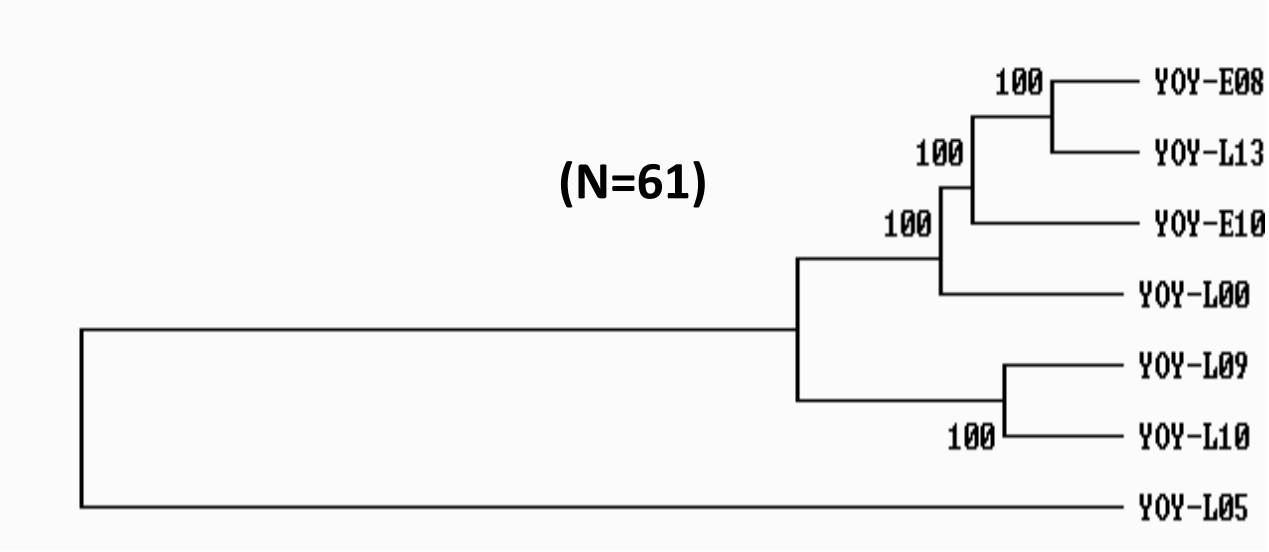


Neighbour Joining dendrogram (Nei's DA) based on gene frequencies at mtDNA in YOY beluga sturgeon groups captured during **2004 - 2014**

Stellate sturgeons



***Cytochrome b* RFLP** haplotype frequency in groups of YOY stellate sturgeons



Neighbour Joining dendrogram (Nei's DA) based on gene frequencies at mtDNA in YOY stellate sturgeon groups captured during 2000 - 2013

Conclusions:

1. Electro-narcosis proved adequate for reducing stress and subsequent drop back in adult sturgeons;

2. 3D bathymetry and ADCP velocity profiles are essential tools for understanding environmental conditions d/s Iron Gate dams;

3. Novel Thelma receiver **TBR 700** has the capability to record signal strength;

4. A combination of Vemco and Thelma acoustic tags and receivers will be used to achieve required resolution of sturgeon movements d/s Iron Gate dams;

5. Existing DNA samples collected during 2000 – 2014 will be used as reference for understanding genetic diversity of sturgeons arriving at the dams

Acknowledgements:

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Thank you for your attention!
Questions?